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Erythema nodosum leprosum post-COVID-19 vaccination: endemic while pandemic

Editor

Leprosy is an important global health concern. Erythema nodosum leprosum (ENL) is a type 2 immunological reaction, indicative of bacterial-rich leprosy. We report a case of ENL arising following Pfizer BNT162b2 mRNA COVID-19 Vaccine.

A 32-year-old man, born in Thailand, who had been living in Israel for 4 years, was referred to the ER due to the appearance of a diffuse nodular rash across his trunk and extremities (Fig. 1a). The man was in good general health, with no family history of dermatological diseases. The rash appeared 14 days following the first dose of Pfizer's BNT162b2 mRNA COVID-19 vaccine. On physical examination (Fig. 1a), erythematous nodules were present in a general distribution over his trunk, extensor surfaces of both upper and lower extremities and face. A few hyperpigmented patches were present on the back. There were no systemic symptoms, lymph nodes were not enlarged, and sensory loss or nerve thickening were not observed. Blood

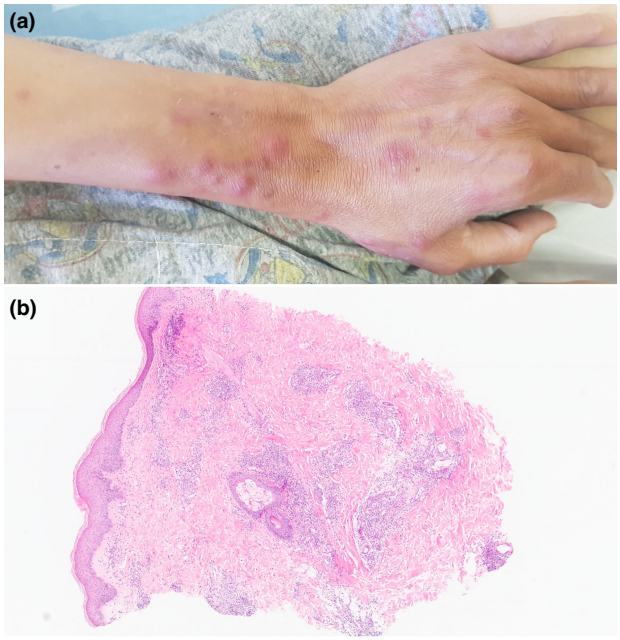

Figure 1 Clinical (a) and histological (b) aspect of ENL developed after Pfizer BNT162b2 mRNA COVID-19 vaccination.

examination showed mild leucocytosis 11.8K with neutrophils 9.9K (83.9%), haemoglobin 12.7 gr% (13.9–17.7 gr%) and elevated CRP 8 mg/dL (normal range 0–0.5 mg/dL).

Differential diagnosis included erythema nodosum, subcutaneous Sweet syndrome and other panniculitides. Biopsies for pathology and tissue culture were taken. H&E staining showed preserved epidermis, oedematous papillary dermis and superficial and deep perivascular and diffuse mononuclear infiltration with numerous neutrophils and several small clusters of histiocytes, forming mainly indistinct granulomas. One clearer granuloma without necrosis was also observed (Fig. 1b). Alcian blue and PAS stains were negative. Ziel Neelsen stain showed many acid fast bacilli. Skin smears sampled from several locations, including ears, elbows and knees, as well as from the nodular lesions, were examined by PCR for *Mycobacterium leprae* bacilli and found to be highly positive. Based on these findings, the case was diagnosed as erythema nodosum leprosum, and WHO-MDT (multi-drug therapy), including rifampicin, clofazimine and dapsone, was initiated.

Leprosy (Hansen's disease) is caused by two types of acid-fast positive bacilli, *M. leprae* or *M. lepromatosis*. Immunological reactions, type 1 and 2, are systemic inflammatory complications that may occur before, during or even years after treatment has been completed. ENL type 2 reaction is characterized by a sudden eruption of numerous painful nodules, typically on the extensor surfaces of the extremities and on the face. They last for a few days and are replaced by crops of new lesions. Histology shows neutrophilic infiltration

Table 1 Reports of ENL following vaccination

Vaccine	On MDT	Incidence	Time interval	Treatment	Resolution
Smallpox vaccine[2]	NA	New ENL in 5 patients (7%) and worsening of existing ENL in three patients (4%) $n = 73$	NA	NA	NA
Killed ICRC bacilli[3]	NA	2 patients (4.3%) $n = 46$	3–4 weeks	NA	NA
Mycobacterium indicus pranii vaccine[4]	Yes	NR $n = 1$	10 days	Prednisolone 40 mg NSAIDs	Yes
Influenza[5]	Yes	NR $n = 1$	Month	Prednisone 20 mg	Yes

MDT, multidrug therapy; NA, not applicable; NR, not relevant. Time interval refers to time interval from vaccination until appearance of symptoms.

superimposed upon chronic inflammation and heavy bacterial load, as demonstrated in our patient's biopsy. Other clinical manifestations are fever, headache, tender lymphadenopathy, orchitis, iridocyclitis and painful joints. ENL is the first manifestation of Hansen's disease, coming to medical attention, as in our case, in a third of the patients.[1] ENL can be precipitated by vaccination, pregnancy, lactation or current infection.[1] Reports of ENL following a vaccination are scarce, but include several cases following smallpox vaccination,[2] ICRC,[3] MIP[4] and influenza[5] vaccines, as detailed in Table 1.

The BNT162b2 mRNA COVID-19 Vaccine is a lipid nanoparticle-formulated, nucleoside-modified mRNA vaccine encoding the prefusion spike glycoprotein of SARS-CoV-2, the virus that causes COVID-19. Adverse effects include pain, swelling and erythema at injection site, axillary lymphadenopathy and systemic symptoms. This is the first case report of ENL emergence after BNT162b2 mRNA COVID-19 vaccine. The early diagnosis and treatment in our patient were essential to minimize the likelihood of disability induced by this reaction, as this is often not reversible.

As vaccination rates in leprosy endemic areas rise, so may the likelihood of higher rates of ENL. Attention should be given by health care providers.

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The patient in this manuscript has given written informed consent to the publication of his case details.

Conflicts of interest

The authors have no conflicts of interest to disclose.

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Data Availability Statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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Maskne prevalence and associated factors in Irish healthcare workers during the COVID-19 pandemic

Editor,

In early 2020, mask usage was mandated for healthcare workers (HCWs) to limit the transmission of COVID-19.[1,2] Since then, dermatoses related to personal protective equipment (PPE) have become well-recognized and widely reported, predominantly related to pressure-related damage and irritant contact dermatitis (ICD).[3] A